NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

INCENTIVE MEASURES FOR NAVY WORKING CAPITAL FUND CIVILIAN EMPLOYEES AT NAVAL AIR WARFARE CENTER, AIRCRAFT DIVISION, PATUXENT RIVER, MARYLAND

by

Clifton G. Ross

December 1998

Thesis Advisor: Kenneth J. Euske
Associate Advisor: Theodore A. Hleba

Approved for public release; distribution is unlimited.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE December 1998	3. REPORT TYPE AND DATES COVERED Master's Thesis

4. TITLE AND SUBTITLE : INCENTIVE MEASURES FOR NAVY WORKING CAPITAL FUND CIVILIAN EMPLOYEES AT NAWCAD, PATUXENT RIVER MARYLAND

5. FUNDING NUMBERS

6. AUTHOR(S)
Ross, Clifton G.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Naval Postgraduate School
Monterey, CA 93943-5000

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
N/A

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES
The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT *(maximum 200 words)*
This thesis sought to identify an alternative incentive system and determine if it is feasible to implement it at the Naval Air Warfare Center, Aircraft Division, (NAWCAD) Patuxent River, Maryland. The goal for the incentive system would be to help stimulate an increase in productivity. This thesis also sought to determine the structural and accounting barriers to the implementation of such an incentive system. The thesis examined the current pay and incentive structure at the NAWCAD and examined three alternative incentive systems: individual, group, and organizational. Given that public employees may be motivated differently from private sector employees, this thesis recommended conducting a survey of the NAWCAD employees to determine motivation factors and then implementing a group incentive system on a trial basis in test work-centers.

14. SUBJECT TERMS
Civilian Employees, Incentives, Productivity

15. NUMBER OF PAGES
90

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std.

Approved for public release; distribution is unlimited

INCENTIVE MEASURES FOR NAVY WORKING CAPITAL FUND CIVILIAN EMPLOYEES AT NAVAL AIR WARFARE CENTER, AIRCRAFT DIVISION, PATUXENT RIVER, MARYLAND

Clifton G. Ross
Lieutenant, Civil Engineer Corps, United States Navy
B.S., Kansas State University, 1987

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1998

ABSTRACT

This thesis sought to identify an alternative incentive system and determine if it is feasible to implement it at the Naval Air Warfare Center, Aircraft Division, (NAWCAD) Patuxent River, Maryland. The goal for the incentive system would be to help stimulate an increase in productivity. This thesis also sought to determine the structural and accounting barriers to the implementation of such an incentive system. The thesis examined the current pay and incentive structure at the NAWCAD and examined three alternative incentive systems: individual, group, and organizational. Given that public employees may be motivated differently from private sector employees, this thesis recommended conducting a survey of the NAWCAD employees to determine motivation factors and then implementing a group incentive system on a trial basis in test work-centers.

TABLE OF CONTENTS

LIST OF FIGURES

ACKNOWLEDGMENT

The author would like to thank his wife and family for their support and Professor Kenneth J. Euske for his guidance and patience during the work in performing this investigation.

I. INTRODUCTION

A. BACKGROUND

The Naval Air Station at Patuxent River (Pax River), Maryland is a Navy Working Capital Fund activity. As a working capital fund activity, the NAWCAD's operating costs are charged to its customers. The charges to customers have been increasing driving potential business elsewhere resulting in even higher prices to cover costs. (Introduction, 1998) One factor that has contributed to this problem is the manner in which funding for tasks is determined. Currently, funding for tasks is driven by the amount of work-hours required. This funding mechanism engenders an incentive to increase rather than decrease the number of work-hours per task. However, to increase productivity thereby decreasing costs to customers and being competitive in the marketplace, the incentive must be to reduce the number of work-hours for a given task. An incentive system may help the NAWCAD employees to find ways to reduce the number of work-hours required on a given task. (Pruter, 1998)

B. OBJECTIVES

The objective of this project is to determine the feasibility of implementing an alternative incentive system at the NAWCAD, and to determine if the NAWCAD possesses the accounting information necessary to implement an alternative incentive system.

C. RESEARCH QUESTIONS

1. Primary Research Question

Does the NAWCAD possess the necessary accounting and other information to implement an alternative employee incentive plan?

2. Secondary Research Questions

a. What alternative incentive plans are feasible for implementation at the NAWCAD?

b. What are the barriers within the federal employment system to alternative incentive plans?

c. What are the potential impacts of alternative systems on quality and productivity?

d. What are the barriers to incentive systems within the work structure at the NAWCAD?

e. What information and resources beyond accounting information will be required to implement an alternative accounting system?

f. Is it possible to accurately measure the relative success of an alternative incentive system?

D. SCOPE AND METHODOLOGY

The scope of research will be limited to an examination of the current incentive and work system, analysis and recommendation of potential alternatives, and recommendations for implementation.

The data for this research was collected using three approaches: (1) analysis of past personnel management studies, publications and other governmental test cases, (2) empirical research to understand the current operational environment at the NAWCAD, and (3) archival research to determine the suitability of the existing accounting system to the proposed research solution.

The thesis project consisted of the following steps:

1. Conduct a literature review of relevant books, magazine articles, and other library information resources.
2. Review current organization structure, budgeting and accounting processes at NAWC.
3. Framing productivity and defining how to reward productivity.
4. Comparison of alternative incentive systems.
5. Determining criteria for examination of alternative incentive systems
6. Recommendation of an incentive system.
7. Review of current accounting processes.
8. Determination of accounting data necessary for implementation.
9. Review of changes in accounting processes necessary for implementation.

E. ORGANIZATION OF STUDY

Chapter II reviews the current incentive structure and work system in place at the NAWCAD. The uniqueness of the NAWCAD workforce is discussed. The advantages and disadvantages of the current system are discussed.

Chapter III reviews three alternative incentive systems and discusses their inherent advantages and disadvantages. The applicability of such systems to government organizations is examined along with potential impacts on quality and productivity.

Chapter IV discusses the applicability of alternative incentive systems to government organizations and discusses the potential impacts on quality and productivity. Chapter IV also examines a type of individual incentive system known as broadbanding.

Chapter V provides a comparison the incentive systems and presents other potential incentives to examine for inclusion in the incentive system implementation.

Chapter VI recommends an incentive system for implementation, discusses the potential impacts on the accounting processes and limitations to implementation. The chapter summarizes the findings of prior chapters, answers the research questions, and presents recommendations for further research.

F. BENEFIT OF STUDY

This study provides information to determine if implementation of an alternative employee incentive plan is feasible at the NAWCAD. It is as a resource for other DoD

Working Capital Fund organizations seeking to implement alternative incentive plans as an improvement to their existing business operations.

II. NAWCAD COMPENSATION SYSTEM AND WORKFORCE

A. INTRODUCTION

This chapter gives an overview of the current incentive structure and work system in place at the NAWCAD. It then comments on the advantages and disadvantages of the current system. Finally, it examines the uniqueness of the NAWCAD workforce as compared to other Navy Working Capital Fund installations.

B. CURRENT COMPENSATION STRUCTURE AND WORK SYSTEM

1. Background of the Federal Pay Structure

The Constitution of the United States assigns fiscal control to Congress. This control is exercised through appropriation acts and, in the case of Federal salaries, by enactment into law of policies, principles, and procedures governing the establishment of pay rates for Federal career employees and of specific salary rates for individually identified positions of top Federal executives.

Federal employees are covered by several different pay systems. Some are established by individual laws, and some by administrative determination. The major statutory pay systems for Federal "white-collar" employees are those for the General Schedule, the Foreign Service, and certain Veterans Administration employees. Salaries

under these systems are governed by the policy and principles in Subchapter I of Chapter 53 of Title 5, United States Code. This law establishes the principle of comparability with pay in private enterprise and prescribes a method for annual review and updating of Federal salaries. It also provides that rates may be interrelated in the statutory schedules (Office of Personnel Management, 1980a).

a. The General Schedule

The General Schedule pay system, as set forth in Subchapter II of Chapter 53 of Title 5, United States Code, covers most "white collar" positions in the Executive Branch and in certain agencies of the Legislative and Judicial Branches of the Federal Government. The General Schedule consists of 15 grades, each broadly defined in law in terms of difficulty and responsibility of the work and the qualifications required for its performance. There are five salary levels for employees above the General Schedule. These employees are known as the Senior Executive Service (SES). A salary range of ten steps is provided for grades GS-1 through GS-15. Within-grade advancement is scheduled after one year of service in the first three steps in a grade, after two years in steps 4, 5, and 6, and after three years in steps 7, 8, and 9. To qualify for advancement to the next higher step an employee must demonstrate work at an acceptable level of competence. Employees demonstrating "high quality performance" may advance more rapidly through the rate range for their grades by being granted additional step increases, called "quality step increases." An employee may receive only one such increase, however during any 52-week period (DASN (CP/EEO), 1997). This mandatory time-in-

grade limits the ability of outstanding performers to quickly rise to a level of compensation commensurate with their performance.

b. The Federal Wage System

The Federal Wage System covers employees in "blue-collar" positions including trade, craft, and labor occupations. The pay for these employees is set in accordance with locally prevailing rates under the statutory authority of Subchapter IV, Chapter 53 of Title 5, United States Code. (Office of Personnel Management, 1980a) Locally prevailing rates are determined through the use of annual wage survey.

c. The Senior Executive Service

The Senior Executive Service was established in 1979 under the Civil Service Reform Act of 1978. The Senior Executive Service covers positions in the Executive Branch, classified as Executive Levels I through V, and which do not require Senate confirmation. There are currently five salary rates in the SES. The President sets them at the same time as annual comparability increases are authorized for the General Schedule. (Office of Personnel Management 1980a)

2. Performance Management Programs

In the Department of the Navy (DoN), performance management is used to involve employees, as individuals and as members of a group, in improving organizational effectiveness. Civilian personnel management is based on the merit system. The merit system gets its beginning from the Pendleton Act of 1883 (Robinson,

1997). The merit principle that emerged from the Pendleton Act was narrow in both scope and application. Merit was initially interpreted to mean no more than the necessity for competitive examinations to determine minimal competence for job performance (Robinson, 1997). Its application was entirely based on the manner in which employees were selected for civil service. From its modest beginnings, the merit principle has expanded in scope and substance to the point that it now represents the prevailing philosophy of civil service management. The merit system principles are the public's expectations of a system that is efficient, effective, fair, open to all, free from political interference, and staffed by competent and dedicated employees (Office of Personnel Management, 1980b).

Today's civilian personnel policies and procedures are consistent and support the nine guiding principles of the merit system as required by DoD Directive 1400.25-M and are stated as law in the Civil Service Reform Act (CSRA) of 1978, Title I. (Robinson, 1997) The nine guiding merit principles are (Robinson pg. 26, 1997):

1. Recruit qualified individuals from all segments of society and select and advance employees on the basis of merit after fair and open competition.
2. Treat employees and applicants fairly and equitably, without regard to political affiliation, race, color, religion, national origin, sex, marital status, age, or handicapping condition.
3. Provide equal pay for equal work and reward excellent performance.
4. Maintain high standards of integrity, conduct, and concern for the public interest.
5. Manage employees efficiently and effectively.
6. Retain and separate employees from improper political influence.
7. Educate and train employees when it will result in better organizational or individual performance.
8. Protect employees from improper political influence.

9. Protect employees against reprisal for lawful disclosure of information in "whistleblower" situations.

DoD Directive 1400.25-M titled "DoD Civilian Personnel Management System" establishes policy and assigns responsibilities for the management of civilian personnel of the DoD civilian workforce for all DoD agencies and components. The DoD policies under DoD directive 1400.25 are summarized as:

1. DoD civilian personnel policies, procedures, and programs balance the legitimate needs of uniformity and flexibility.
2. To the maximum extent practicable, total force management should guide the design of civilian personnel policies. Civilian personnel policies should provide unified direction by the Secretary of Defense (SECDEF), meet the requirement of unified commanders and develop a shared sense of mission and responsibility among civilian employees and military personnel.
3. The principles of equal employment opportunity and workforce diversity shall be incorporated into the design and implementation of civilian personnel policies, procedures and programs at all organizational levels.
4. Consistent with workload and mission requirements, the need to create flexible work arrangements that allow employees to better balance their work and other (e.g., family) responsibilities that shall be incorporated into the design and implementation of civilian policies, procedures and programs at all levels.
5. DoD managers at all levels shall ensure that they satisfy any obligations to unions representing employees affected by changes to DoD policies procedures, and programs. Changes that conflict with existing negotiated agreements may not be implemented until the agreement expires or is renewed.

Title VII of the Civil Service Reform Act of 1978 establishes a system for government civilian employees to elect a labor union to serve as their bargaining agent to represent them in matters related to working conditions. Once the employees have voted for a union as their representative, the union becomes the exclusive representative of the employees in their dealings with agency management, specifically individuals employed

as supervisors, or management officials. The Civil Service Reform Act requires supervisors to deal only with the union on conditions of employment. This means that negotiating or discussing personnel policy practices or working conditions cannot be done directly with employees. Although the requirements of the union are not difficult to satisfy (Robinson, 1997), each supervisor must be aware of the importance to follow and understand them. It is important to know the requirements of the labor relations program to be an effective manager/supervisor (DoD Directive 1400.25-M).

For a number of years, there has been growing dissatisfaction throughout the DoN with the existing 5-level performance system (DASN (CP/EEO), draft). An example of the 5 levels of performance or element ratings used on employee evaluations: Outstanding, Exceeds Fully Successful, Fully Successful, Minimally Successful, and Unacceptable. The first three ratings denote acceptable performance while the last two do not. According to the Deputy Assistant Secretary of the Navy (CP/EEO) this dissatisfaction was at an all time high when the Office of Personnel Management issued a new Government-wide directive to increase performance management flexibility (DASN (CP/EEO), 1997). Recognizing the need for change, the DoD passed to the individual military services the flexibility to design their own performance appraisal programs. In close collaboration with a broad cross-section of Commands, activities, and labor organizations, the DoN has designed a performance management program that meets the requirements of its unique culture. (DASN (CP/EEO), 1997) The result today is the use

of two ratings vice the five previously used. These ratings are simply satisfactory performance and unsatisfactory performance.

3. Awards

The DoN Award Program was established to improve Government operations and to recognize employees with performance and incentive awards. In the DoN, awards are intended to motivate employees to enhance productivity by recognizing creativity in the workplace and by rewarding employees and groups of employees when contributions are made (DASN (CP/EEO), 1985). The Deputy Assistant Secretary of the Navy (DASN) Guidance on Implementing Awards Programs in the DoN states that award programs should be designed with the following objectives in mind:

1. Encourage full participation of DoN personnel at all levels in improving DoN and Government operations.
2. To pay cash awards, grant time-off, or incur necessary expenses for the honorary and informal recognition of DoN personnel, either individually or as a member of a group on the basis of superior accomplishment, special act, or exceptional performance.

By Naval Air Warfare Center Division Instruction 12451.2 there are ten separate awards available for supervisors to recognize and motivate employees. (NAVAIRWARCENACDIVINST 12451.2, 1996) They are:

1. Performance Awards
2. Special Act Award

3. On-The-Spot Award
4. Time-Off Award
5. Length of Service Award
6. Government-Wide, DoD-Wide and DoN-Wide Honorary Awards
7. NAVAIRWARCEN Team Award
8. Area Commander's Award
9. Invention Award
10. Suggestion Award

C. UNIQUENESS OF THE NAWCAD WORKFORCE

The NAWCAD employs approximately 7,000 federal civilian personnel. Of this number slightly more than 6,000 are Navy Working Capital Fund employees. This work force is unique from the typical Navy Working Capital Fund activity in that the NAWCAD work force includes a high percentage of engineers, scientists and other technical professionals. These technical professionals perform much of the research and development as well as oversee technical contractual aspects that account for the revenue generated at the NAWCAD. (Introduction, 1998)

It has long been recognized that technical professionals are motivated differently, to some extent, from other workers (The Graduate, 1959, and Leptien, 1995). Professional opportunities, stimulation, and challenging work may provide the incentive for an individual to remain in a position that he or she perceives as lacking in other dimensions (Roberts, 1990). A study, conducted by the Naval Postgraduate School in 1990, of engineers at the Naval Air Warfare Center in Indianapolis, Indiana found that dissatisfaction with work environment was not correlated to turnover. The results imply that even though they were dissatisfied, the employees did not consider it an important

deterrent to remaining at their job. One potential modifier to this statement is that the Center supported a continuous improvement council whose ongoing objective was to bolster more openness and trust within the organizational climate. While some individuals may not describe their work and or working conditions as ideal, demonstrated efforts toward producing meaningful change in the organization may provide optimism for future improvements to current working conditions (Roberts, 1990).

At Indianapolis, the multivariate analysis of the correlates of turnover showed that age, length of stay in the organization, and the presence of dependents were positively related to the intent to remain.

> ...the decision to leave or stay may ultimately hinge on the member's perceived quality of life. In addition, today it is often difficult to draw the line between individuals and their families in any personnel decisions. (Roberts, 1990)

Additionally, the perceived potential to receive additional education, either within the organization or through civilian institutions, was a motivator for technical professionals to remain at Indianapolis (Roberts, 1990).

While management recognizes the importance of providing incentives for technical professionals, there is no uniform agreement on implementation. Recognition and incentive must be provided to these personnel in ways other than advancement into administrative positions. (Jain and Triandis, 1990)

For years industry has recognized this need. (Muhlemeyer, 1992) In a study conducted almost thirty years ago, three-fourths of companies use a parallel ladder or

series of technical positions that do not entail increased administrative duties (The Graduate, 1959). This enables scientists and engineers to be promoted and yet remain at work in their technical specialties. The problem encountered with such an approach is that the parallel ladders are usually not equal or perceived as equal (The Graduate, 1959). The motivation of technical personnel in a research and development setting remains a management challenge. (Jain and Triandis, 1990)

D. ADVANTAGES AND DISADVANTAGES OF CURRENT SYSTEM

The federal pay structure, performance management programs and awards programs in use make up the current NAWCAD incentive system. The advantages of the system include its longevity, uniformity and broad coverage of a range of occupations and salaries (Office of Personnel Management, 1980a).

According to an Office of Personnel Management report, disadvantages of the current system include the relative non-responsiveness to the need to make immediate changes, inflexibility to unique situations, and rigid requirements for promotion (Office of Personnel Management, 1980a). Figure 1 summarizes just some of the advantages and disadvantages of the current federal employment system:

FEDERAL EMPLOYEMENT SYSTEM

ADVANTAGES	DISADVANTAGES
- Time proven system in place for over 100 years, constantly being updated and improved. - Uniform system for all federal civilian employees. - Wide range of pay scales and awards.	- Non-responsive to the needs of individual commanders. - Inability to recognize unique incentive situations such as research and design organizations. - Mandatory "time-in-grade" for advancement.

Figure 1. Advantages and Disadvantages of Federal Employment System.

III. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

A. INCENTIVE SYSTEMS

Incentives can help in motivating behavior to meet performance goals for specific jobs and reward the incumbents for achieving the goals. The philosophy underlying a typical incentive system is that a person, or group of persons, is compensated for performance judged against a predetermined standard. (Riggs, 1995) If performance is superior to the standard then additional compensation based on some incentive plan is given to the worker. It is important to note that incentive compensation can take the form of non-monetary or monetary incentives. Both are widely used, however, the use of monetary incentives is more widely found in the commercial sector. This chapter focuses its discussion on the use of monetary incentives. The following chapter includes a discussion of non-monetary incentives.

Many different incentive plans have been developed in the past depending on situations and needs. Incentives for performance plans are not new to corporate America. (The Graduate, 1959) Currently, there are a wide variety of incentive systems in use. These compensation programs are by design variable and fall into three main categories: individual incentive, group incentive, and organizational incentive. Individual, group, and organizational incentive plans have all been used with various degrees of success. (Pelletier and Rahim, 1993; Welbourne and Cable, 1995; Johnson, 1996; and Marchetti, 1997) Within each of these categories there are monetary and non-monetary incentives.

(Riggs, 1995) Non-cash incentives range from merchandise, travel, and gift certificates to increased recognition and status. (Pruter, 1998)

Over at least the last fifteen years, U.S. corporations have increasingly been turning to performance-related pay plans. These variable compensation programs are intended to link pay directly to performance. (Webb, 1984; Keefe, French and Altman, 1994; and Rubino, 1997) Figure 2 below lists 9 major forms of variable pay.

1. Current Profit Sharing	-Uniform payment to all or most employees based on an organizational profitability formula.
2. Gainsharing	-Plans designed to measure the productivity of a group, unit, or organization, and to share the value of productivity gains uniformly with all participants.
3. Individual Incentive	-Payment based on a standard of individual knowledge.
4. Instant Incentive	-Special payment to an individual for a noteworthy achievement.
5. Merit Bonus	-Payment based on individual performance appraisal given in lieu of, or in addition to, a merit increase and never added to base salary.
6. Organization-wide Incentive	-Variable payment based on a measure of organizational performance.
7. Pay-For-Knowledge	-Pay increase based on number of skills or jobs mastered.
8. Restricted Stock/Stock Option	-Grants to non-executives of stock subject to restrictions or options to purchase stock.
9. Small Group Incentive	-Uniform award to all members of a group, based on their achievement of a predetermined objective.

Figure 2. Nine Major Forms of Variable Pay. (Peck, 1995)

Not only are corporations increasingly turning to incentive plans but also more of them are either implementing plans or considering implementing plans. (Wakefield, 1996) Figure 3 below shows the use of selected compensation programs by U.S.

industry. The Figure is presented to indicate the diversity of plans in use. The various programs listed along the horizontal access are discussed in this chapter and Chapter IV.

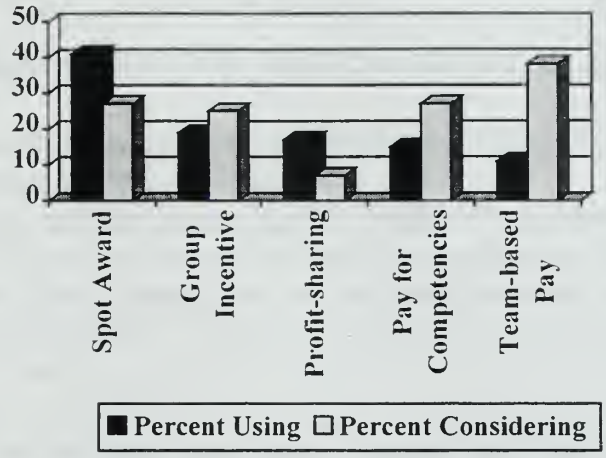

Figure 3. Companies Using or Considering Alternative Incentive Systems. (U.S. Congress, 1995)

1. Individual Incentive Plans

Incentive plans are designed to focus on either individuals or groups. Individual incentive plans attempt to reward individual performance. This is the most direct form of incentive plan available, applicable when an action taken by a worker can be seen to directly impact the productivity. (Camman and Lawler, 1973) There are three types of individual incentive plans: piecework plans that reward output, multiple individual criteria plans, and plans with both organizational standards and individual goals. Plans with multiple individual criteria include both quantitatively measurable and qualitatively evaluated performance. (Peck, 1995)

In order to implement individual incentive plans, individual performance must be closely monitored. Usually individual standards are required for each worker under an individual incentive plan. These plans, in general, are applied to direct workers or workers in very independent jobs. (Chingos, 1995) Incentive plans that are based on individual performance provide the most direct connection between performance and pay of all the incentive plans. This direct linkage means that the individual plans should in general provide the strongest incentive for motivation of work behaviors of any plan. (Lawler, 1971)

In order for individual incentive plans to be perceived as fair and effective, the employee must be in a position of relative independence. (Marshall, 1998) That is, relatively free of external constraints which could be perceived as hindering the employee from meeting the incentive goals. Additionally, since these plans are usually based on engineered standards, the organization will have the need to develop or maintain a sound work measurement program to implement the plan.

Incentive pay systems have a positive effect on productivity, costs, employee moral, and supervisory effectiveness. (Florowski and Lifton, 1987) They focus more on the person than the job and are intended to relate an individual's performance to the business objectives. According to studies by Barnes (1980) and Hess (1977) wage incentives on average, raise the efficiency level from 60 percent to approximately 120 percent (standard efficiency being 100 percent). In practical terms this could be considered a doubling of efficiency or an increase of twenty percent above baseline

efficiency. With this kind of improvement in productivity it is hard to ignore pay incentives as a means to responding to competition (Wakefield, 1996). However, the effect on quality is somewhat mixed, as discussed later in this chapter. (Stone and Gerard, 1997 and Hedley, 1998)

2. Disadvantages of Individual Plans

The fact that individual plans reward individual output can produce a negative impact on organizational behavior. Workers may place individual output considerations ahead of the groups' output. (Milakovich, 1995 and Sharma and Sarel, 1995) For example, a worker may delay the processing of a critical but time consuming replacement part opting instead to process a batch of less time consuming orders in order to exceed a production quota.

Implementation of new methods or management requirements may be viewed as hindrances to productivity and attempts to negatively impact an individual worker's incentive compensation. (Risher, 1997) An example might be the implementation of a morning work-planning meeting. While this may enhance overall communication within the work group an individual might view it as a detractor from productivity.

Since individual plans are usually tied to increasing output, such plans may peak when the limits of increased physical effort are reached. (Lawler, 1971) An example would be in manufacturing production where the physical constraints of personnel, equipment and materials limit production above a certain set point without the input of additional assets. Plans that set standards too high may discourage employees from

trying to reach unreasonable goals. Additionally, employees may disregard safe work practices in attempts to increase output resulting in an increased accident rate.

Individual plans require the development of work measurements for each employee. Development and maintenance of a highly accurate work measurement program can be a costly and time-consuming task. (Pruter, 1998) Also, indirect workers may be excluded because their impact on productivity is too difficult to determine. This exclusion can lead to lack of cooperation between direct and indirect workers. (Fowler, 1995)

Pelletier and Rahim (1995) reports that a survey of 25 individual incentive plans conducted by The Conference Board found that approximately one in four were successful in meeting their most important objective. The most important objective in these plans was defined as improved productivity. There were additional benefits identified in implementing the incentive plans, such as improved employee moral and decreased sick leave usage. These benefits were not considered in calculating the success ratio.

Some companies, however, have abandoned the use of incentive programs due to a lack of perceived performance. Peck (1995) presents the following reasons for the discontinuance of four plans:

- A high-technology manufacturer that had a multitude of piecework-type individual plans replaced them in the interests of fostering teamwork with plans based on organization-wide performance factors.
- A paper products manufacturer replaced its individual incentives with group gainsharing arrangements on the grounds…that individual plans ran counter to their effort to inculcate a culture of teamwork.

- An electrical products manufacturer has a changing work environment that necessitates "the need to rotate employees, inculcate the teamwork mentality, and develop and install consistent pay for performance measures." The company's production level individual incentives worked directly against these needs because: (1) employees who had jobs that they felt were easy did not want to rotate to what they perceived as more demanding jobs because of the possible loss of incentive opportunity, and (2) the individual performance standards were not well-maintained, resulting in higher payment than warranted.
- A primary metals company had a plan through which if the individuals achieved their goal, they could receive a payment even if the company as a whole lost money. In a time of adverse business conditions, this could not be justified, so the plan was discontinued. Also contributing to the adverse evaluation of the plan was a reported tendency on the part of participants to attempt to maximize their incentive opportunities through "sub-optimization" and "finger-pointing" rather than joint problem solving efforts. (pg. 23)

Figure 4 below summarizes Pros and Cons to individual incentive plans. The left-hand side of the figure lists the potential benefits in productivity and resource usage. The right hand side of the figure lists areas for concern whenever implementation of an incentive system is anticipated.

Potential Benefits	Possible Drawbacks
- Increased Productivity	- Lower Product Quality
- Lower Production Costs	-Higher Implementation and Admin. Costs
- Less Direct Supervision	- Supervisory Suggestions May Be Seen as Distractions
- More Effective Use of Equipment	
- Entrepreneurial Behavior Is Reinforced	- May Increase the Risk of Accidents
- Motivates Higher Performance	- May Not Account for Interrelated Behavior
- Variable instead of Fixed	
- Individuals Better Understand How Their Performance Is Linked to Business Objectives	- Standards May Be Set Too High
	- There May Not Be Any Payment and Morale Will Suffer
- Distinguishes Between Performers	- Workers May Oppose Changes in Production Scheduling
- Focus on the Person, Not the Job	
	- Disparities in Pay May Cause Jealousy and Lower Moral

Figure 4. Individual Incentive Systems Pro's and Con's. (Peck, 1995)

3. Group Incentive Plans

Group incentive plans relate group performance to group awards. Usually it is difficult to develop individual standards for indirect workers and thus they are excluded from individual incentive plans. (Lawler, 1971 and Levine, 1994) Group plans enjoy an advantage in that they may be applied to both direct and indirect workers. Performance measurements for groups include: historical output estimates, forward performance goals, or aggregated task standards. (Chingos, 1995)

In a study conducted by Globerson and Parsons (1984), industrial engineers were asked to state their general preference with regard to the optimal group size. The most frequently preferred group size was five to ten employees. Additionally, only 27 percent of those who used incentive systems and nine percent of those who did not were in favor of individual incentive systems. (Globerson and Parsons, 1984) In other words, the majority of industrial engineers surveyed were in favor of group incentive systems. The preference for group incentives and group sizes ranging from five to fifteen employees has been supported in other studies. (Fried, 1991; Kameda and Stasson, 1992; Bergstrom, 1994; and Benefits, 1996) According to Fowler (1995) some advantages of group incentive systems are the following:

- Motivates coordination to improve overall performance
- Easier than individual plans to set up and revise
- Less costly than individual plans to develop and maintain
- Increases cooperation between employees and management
- Adapts to indirect labor because they can be included in the group
- Creates pressure on low performers to improve their performances

Team-based performance incentives (TBPI) are a subset of group incentives and are an increasingly popular complement to compensation systems in which employees are rewarded for increasing productivity and quality. TBPI's are similar in most respects to group incentives. The system encourages employees and management to work together

to solve and avoid problems related to quality, and efficiency. TPBI are recognized as a valuable reward process for TQM systems. (Ezzamel and Willmott, 1998)

4. Disadvantages of Group Incentives

Many organizations, in an effort to improve competitiveness and productivity, are increasing their use of group incentive systems. (Fowler, 1995 and Benefits, 1996) These programs do not always work well. Fried (1991) identifies a number of reasons why the programs falter. Teams that are too large suffer from communication and productivity problems. Just forming a team does not improve productivity. (The Network, 1996) The concept of available productive time must be factored into project planning and estimating. Team members may resent those who do not actively and significantly contribute. Improperly directed teams may not produce the results desired. Assigning specific roles to team members can alleviate some of these problems. (Fried, 1991)

Very little is known about how employees covered by group incentives interpret the programs. (Welbourne and Cable, 1995) However, research indicates that it must be clear to the employees how the employer expects the incentive package to interact with the currently established pay system. Otherwise, the previously established behavioral expectations are retained and supplemented with new performance goals that might or might not be consistent with those instituted in the past. (Lawler, 1990 and Welbourne and Gomez-Mejia, 1991)

5. Organizational Incentive Plans

An organizational incentive system is one by which the individual's incentive depends on the overall organizational performance. Organizational incentive plans are a category of group plans; the group is simply defined as the entire organization. In general, organizational incentive plans are designed to encourage employees to either improve performance or contribute ideas on how to improve operations. The companies in turn reward employees with a bonus based on savings in improved performance. The basic rational behind these types of plans is that the level of productivity is the result of the entire work force, including support personnel such as the material handler and the janitor, not just the production worker. (Welbourne and Cable, 1995) Additionally, if the focus is on overall productivity, then organizational plans make it more likely that the workers' interest will broaden to aspects outside the narrow confines of his or her own job. Types of organizational plans include Scanlon, Rucker, and gainsharing or profit sharing. (Ezzamel and Wilmott, 1998) All are similar in that they attempt to increase productivity, however, they vary in method. Scanlon plans measure gains on sales dollars compared to labor costs. Rucker plans measure the value-added in manufacturing compared to labor cost. Gainsharing and profit sharing are team-based pay systems that seek to provide an explicit link between business performance and team reward. (Patton and Daley, 1998)

There are various reasons why companies would establish an organizational incentive system, the major ones are (Pelletier and Rahim, 1993):

- Simple and inexpensive to install and maintain
- All employees directly and indirectly included
- Can be installed within a short period of time and therefore can have an immediate impact on performance.

6. Disadvantages of Organizational Incentives

The disadvantages of organizational plans are similar in many ways to those for group plans. There may be a perceived lack of equity in the organization. (FitzRoy, 1995) High performers may feel that they are "carrying" their co-workers while "freeloaders" my not feel compelled to work their hardest. Additionally, the basis of the incentive award my not be understood by all workers leading to a lack of trust in the plan. (McCue and Gerasimos, 1997)

One of the major drawbacks of an organizational plan is the low motivation at the individual level; an individual or group can find themselves performing very well but rewarded very little depending on how the rewards are calculated. (Pelletier and Rahim, 1993)

B. SUCCESS FACTORS AND UNFORSEEN RESULTS

1. Success Factors

Although there is no guarantee that an incentive system will be successful, the probability of success of any of the plans can be enhanced by paying attention to the following key points (Hornestay, 1996):

- The system should permit earning an incentive that is perceived to be of significant value. Globerson and Parsons (1984) found that the average incentive paid by companies using incentive systems equals 23 percent of base salary. The minimum, satisfactory and exceptional monthly incentives were 14 percent, 26 percent, and 41 percent respectively. This is still true today. (Chingos, 1995)
- The system should be simple to understand. Since incentive plans require the company to pay money, employees may suspect that the company manipulates the numbers. Employees should be able to calculate their own incentive compensation. If the system needs to be more complex to include quality issues, the company should educate the employees on how the quality element is calculated.
- Performance criteria included in the incentive plan should be within the control of the group.
- Sufficient motivation for all the involved parties is needed to maintain the incentive system. (Incentive systems should not be seen as an easy "fix" for an organization looking to improve productivity. They require work to implement and maintain.)
- The supervisor needs to be highly motivated to maintain the system. The supervisor can cause a system to fail by manipulating the reporting systems or by generating a negative environment for the incentive system.
- In situations where unions are representing employees, they should also be included in the process of establishing pay incentives to guarantee cooperation.
- The incentive system must be continuously maintained.
- The jobs employees do must be such that they can clearly tie their efforts to the reward received.

2. Unforeseen Results

Implementation of an incentive can produce unforeseen results both positive and negative. One study on the effectiveness of incentive plan implementation produced the following unforeseen results (Peck, 1995):

- A plan that operates at the business unit level of an electrical equipment manufacturer and uses a combination of financial and production goals for the unit, as well as specific performance goals for individuals, had the effect of instilling a degree of ownership in the process on the part of the participants that surprised management's expectations.

- A plan covering middle and lower level management funds the target payment from the merit increase budgets. According to the survey participants, this generates a belief on the part of the plan participants that the payment is entitlement, and they should receive, at the minimum, the target payment.
- A plan covering employees in retail branches of a bank evaluates individual performance in relation to a mix of sales and service goals. The survey respondent reported that there is confusion among the participants as to how they should balance their sales vs. service roles in their day-to-day activities.

Careful monitoring of the implementation of a plan is essential. Unforeseen results may occur. Being aware of the positive and negative results can help bolster the success of the plan or be addressed to minimize negative impact.

C. SUMMARY

Incentive systems are not new. This chapter investigated the concepts underlying a typical incentive system and discussed the three main types of incentive systems in use in corporate America today. The chapter examined advantages and disadvantages of the three incentive systems and unforeseen results of implementing an incentive system. The next chapter examines these incentive systems in the context of the government.

IV. THE GOVERNMENT SECTOR

A. INTRODUCTION

Chapter III examined incentive systems commonly used in corporate America. This chapter examines the applicability of these systems to the government sector and discusses impacts on quality and productivity. The chapter also examines an incentive system that is relatively new to both the civilian and government sectors.

B. APPLICABILITY TO THE GOVERNMENT

While it is true that the incentive plans discussed in the previous chapter originated in the private sector, increasing productivity to increase profits is not a criterion for their implementation. (Guide, 1985) Any organization wishing to reduce labor costs, cut production time or reduce waste and inefficiency is looking to improve productivity. Thus, the organization may benefit from the proper implementation of an incentive plan. It has been recognized that organizations within the Federal Government may be able to utilize private sector initiatives to improve performance (Mica, 1996; Agor, 1997; King, 1997; Risher, 1997; and Hedley, 1998) The Federal Government is not in the business of generating a profit, but it does have the responsibility to maximize use of tax dollars. (Guide, 1985)

1. Performance Measurement

Performance in public agencies can be more difficult to measure than in some private-sector organizations. (Milakovich, 1995) Private sector performance measures often relate to profits or financial ratios. (Miller & Cardinal, 1994) Many public agencies do not operate on a profit basis and thus the definition of a "bottom line" for performance is more difficult. Kerr's (1975) article "On the Folly of Rewarding A, While Hoping for B" underscores the dilemma of many public sector agencies. Kerr stressed the need to reward performance based on objective criteria that reflect the mission of the organization. He also indicated that a misdirected reward system would not improve performance in desired areas. Stone and Gerard (1997) show that the use of inappropriate reward systems did not improve performance in one public sector organization, the Child Support Enforcement Agency. Other examples of the importance of appropriate reward systems can be found in Ridgeway (1956); Dougherty (1984); Gabris and Mitchell, (1985); Rickert, Duncan and Ginter (1995); and Ralston and Waters (1996).

There have been attempts to quantify productivity in public agencies. For example DoD Instruction 4010.37, "Efficiency Review and Resource Requirements" sets out a process to determine the most efficient organization and methods of work accomplishment. Incentive plans may tie in to this efficiency review process in several ways. (Guide, 1985) Examples would include the development and use of engineered standards, uniform standards, historical standards, and non-standard estimates.

2. Authority

As discussed in Chapter II, the civil service system is over 114 years old and is governed by a set of rules and regulations that have evolved over its life. (Erdreich, 1997) A new program must either fall within existing guidelines or be approved by Congress prior to its implementation. Title V, Chapter 45, United States Code grants the authority for the Government Employees' Incentive Awards Program, and authorizes the Office of Personnel Management to issue rules and regulations under which agencies must conduct their Incentive Awards Programs. Section 2301(b) of Title V, United States Code is the law that is the backbone of the current merit system. (Erdreich, 1997) While the implementation of productivity gainsharing programs and the use of cash awards are provided for under Chapter 45 of Title V United States Code, the use of other incentive programs may not be covered. (Guide, 1985) There has been debate on the latitude that these laws provide in the implementation of alternative incentive systems. (for example Guide, 1985 and Bain, 1998)

The agency responsible for determining the legality of new incentive systems is the Office of Personnel Management. Title VI of the Civil Service Reform Act of 1978, 5 United States Code 4703, gave the Office of Personnel Management authority to conduct or supervise projects to determine whether a specified change in personnel management policies or procedures would be an improvement over current federal personnel laws and regulations, except those applying to leave, benefits, merit principles, equal opportunity and limitations on political activity. (Hornestay, 1996) These projects

are known as demonstration projects. Demonstration projects, authorized under the 1978 act, are limited to five years and 5000 employees, and no more than ten projects can be active at one time. (Hornestay, 1996)

Demonstration projects can alter or completely change the personnel policy an agency uses. These changes in policy may affect employees negatively depending on their current career status. For example, someone who is close to retirement may resist a change to a new personnel policy that they perceive as negatively impacting the remainder of their career. An example would be an incentive system that reduces basic pay below the current level but provides incentive pay to compensate. If the employee views the new incentive system as an immediate reduction in pay and believes that it will take time to return to their previous level of compensation the employee may view the incentive system as a direct threat to pay for the remainder of his or her career. To protect employees from disruptive changes in their employment and careers, employee unions have negotiation and consultation rights on matters affecting their bargaining units.

Demonstration projects currently underway are evidence of testing potential rule changes. In one demonstration project the FBI was authorized by legislation to evaluate the effects of retention allowances and relocation bonuses on severe staffing problems in its New York office between 1988 and 1993. More recently, the fiscal year 1996 Transportation Department appropriation gave the FAA permission to create a new personnel system as a demonstration project.

3. The Individual Agency

Changes to the civilian personnel policy at the Federal Government level would affect employees in hundreds of government agencies. Changes that are appropriate for one agency may be inappropriate for another. The intent of the demonstration project authorization is to allow agencies to implement personnel policies that reflect their specific needs and situation. These changes need not be agency wide, they may apply to one organization or use an organization as a test case prior to agency implementation. This ability to tailor both the incentive system and the size of the workforce impacted makes individual demonstration projects attractive. Hence, the individual agency legislative route may become more common under the performance-based organization (PBO) concept advocated by the National Performance Review. (Hornestay, 1996) The PBO approach urges agencies to seek congressional relief from legislative, regulatory and systemic constraints. In return the agencies are responsible for more precise accountability for performance and program results.

There have been demonstration projects by individual agencies struggling to remake themselves in the 1990's (e.g., Orvis, Hosek and Mattock, 1993; Hornestay, 1996; and Office of Personnel Management, 1998a and b). They desire to implement changes to personnel management policies on an organizational or agency wide basis seeking to improve performance. For them a demonstration project was the tool of choice. Examples include:

- Naval Air Warfare Center China Lake where 12,300 GS and GM employees were involved in the implementation of broad pay bands and performance-based pay for all white-collar employees.
- National Institute of Standards and Technology where broader paybands for GS grades, white-collar pay for performance, expanded direct hire and delegated examination authority, supervisory pay differentials, recruitment and retention bonuses, and flexible probationary periods were implemented.
- U.S Air Force Sacramento Air Logistics Center where broad pay bands, consolidated job series, revised supervisory grading criteria, performance rating replacement, gainsharing, and organization wide quality/productivity measurement were implemented.
- Federal Aviation Administration Air Traffic Control Facilities in four sites where retention allowances of up to twenty percent were paid quarterly to attract and retain well-qualified employees in hard-to-staff areas.
- FAA Airway Science Curriculum which implemented an alternative recruitment method for five major occupations through a four-year university program. (Hornestay, 1996)

4. Current Guidance

Current OPM guidance on incentive awards allows agencies to reward employees' past performance, sustained superior performance over a specific time, or a special act with bonus cash awards of a nonrecurring nature. The difference between past performance and sustained superior performance is the length of time involved. Past performance is usually defined as a period less than one year, and sustained superior performance usually means over the last rating period (typically one year). Special act awards are usually provided for nonrecurring single acts that result in measurable savings to the government. Sustained superior performance awards are normally associated with annual awards for outstanding performance where the value of the performance cannot be quantified. None of these award options is appropriate for administering productivity based reward systems because of limitations in either the type of behavior being

rewarded, the frequency of the reward, or the method of determining reward amounts. (Ways, 1980) The primary reason that they are inappropriate is because they do not specify the type and amount of incentive prior to the action of the employee. Instead they rely on a supervisor or other leader to take the time to recognize and reward the work. (Ways, 1980)

The implementation and administration of a productivity based reward system must be a process that continually monitors and immediately rewards the desired behavior. The reward criteria must be specified prior to the start of the performance period. The award options currently available reward performance and determine incentive after the fact.

The Federal Personnel Manual Chapter 451 on incentive awards describes alternatives for providing bonuses to reward past performance, but the types of awards are not appropriate for productivity based reward systems. The reasons are the same as discussed in the paragraph above. As a result, agencies may be reluctant to initiate productivity based reward systems and where they do, the systems tend to be inconsistent. (Ways, 1980)

The use of incentive plans is applicable in the government even if they are difficult to implement. Particular attention must be paid to the desired behavior and outcomes of the reward system. The process must be examined to ensure that the incentive system implemented rewards the desired behavior. Some successes have been

achieved. However, many of the projects have not been underway long enough to make a final determination of success or failure. (Hornestay, 1996)

Depending on the type of incentive system implemented, there may or may not be a need to obtain special legislative approval. Examples where legislative approval would be required include changes in hiring and probationary period practices, bonuses, and retention pay. Examples where legislative approval is not required include total quality management and labor-management cooperation initiatives. Despite the difficulties, there is evidence that the OPM and other governmental agencies are willing to support demonstration projects, such as those discussed here, that exceed the scope of what is considered normal operations in the search for improved ways of conducting business.

C. IMPACTS ON QUALITY AND PRODUCTIVITY

Governmental organizations attempting to increase productivity may encounter problems such as inadequate systems of productivity measurement, inappropriate definitions of power and status, and waste and fraud (Stone and Gerard, 1997). These issues must be resolved or at least addressed prior to implementation of an incentive system. To succeed, incentive practices must promote fundamental changes in governmental operations. For example, there must be stronger relationships between performance and reward that encourage public managers and employees to enhance their productivity. (Stone and Gerard, 1997) An example is the current personnel demonstration project in the civilian acquisition workforce (see Bain, Caruth, and Johnson, 1998).

In 1996, the Department of Defense was granted legislative authority by Congress to develop a personnel demonstration project for the civilian acquisition workforce. The goal was to enhance quality and professionalism. To accomplish this goal the project team established a goal of designing new personnel and human resource management systems that would achieve and maintain the best workforce for the acquisition mission. Briefly, the project combines broadbanding, discussed in the next section, with a pay for performance element. Under the system, an employee's contribution to organizational goals is evaluated by a supervisor and assigned a numerical score. That score is ranked against the scores of all other employees. An employee's ranking determines the amount of the incentive. The basic plan that evolved is in the process of being implemented this year. Results will not be known for several years.

When an incentive system is implemented it may affect quality and productivity. These potential impacts on quality and productivity should be of concern. (Sharma, 1995; Crawford and Krahn, 1998; and Hedley, 1998) To address these issues, some productivity based reward systems evaluate employees on factors besides their ability to meet productions standards, such as requiring employees be judged adequate in all phases of performance and conduct. These provisions help assure that employees on production bonus plans will not ignore key parts of their jobs or reduce total output by inadequate attendance (Ways, 1980).

Any organization that is considering implementing an incentive plan must determine whether the goal is to work harder or work smarter. "The working harder or

smarter aspect of incentive plans stems exclusively from what it is the organization hopes to accomplish through installation of a plan." (Guide, 1985) For example, if the organization wants to increase productivity through increasing physical output and believes that physical activity can be increased, then working harder is the objective. If, however, the organization wants to improve productivity and believes that this can be accomplished through improved processes and methods then working smarter becomes the objective. (Guide, 1985)

D. BROADBANDING

As discussed above, the Civil Service Reform Act of 1978 authorizes the Office of Personnel Management to conduct demonstration projects to determine whether changes in personnel policy or procedures could result in improved Federal personnel management. (Office of Personnel Management, 1998a) In 1996, the Department of Defense, seeking ways to improve efficiency and enhance the quality of its civilian workforce, was granted legislative authority by Congress, via the Office of Personnel Management, to develop demonstration projects that experiment with new and different personnel concepts. (Bain, 1998) The Air Force Logistics Center and civilian acquisition workforce initiatives discussed above are two examples.

Another such demonstration project is called the Contribution-Based Compensation and Appraisal System (CCAS). The idea behind the CCAS is to change the culture of GS employees from an entitlement based culture to a contribution-based culture. CCAS is an organizational wide change but it impacts the workers at an

individual level. An example is the way in which pay raises are determined. Under the current system pay raises are given out based on two criteria: (1) be an employee, and (2) longevity. If you meet these criteria you get paid more money this year than last year. (Bain, 1998) The criteria for awarding promotions are different than those for pay raises.

At the heart of CCAS is the replacement of distinct GS pay grades with "pay bands" or a range of salary to cover a group of workers. This regrouping of pay grades is known as broadbanding. (Bain, 1998) Each occupational family is composed of discrete pay bands corresponding to recognized career advancement within the occupations. (Office of Personnel Management, 1998b) Figure 5 shows a sample pay band chart.

Broadband Level	**GS Paygrades Covered**	**Salary Range**
Level I	GS 1 – 4	$12,960 - $23,202
Level II	GS 5 – 11	$19,969 - $47,589
Level III	GS 12 – 13	$43,876 - $67,827
Level IV	GS 14 – 15	$61,656 - $94,287

Figure 5. Sample Pay Band Salary Chart. (Bain, 1998)

Note that the pay bands overlap salaries the same way that the current GS paygrades overlap.

The current Government Schedule pay grade system is classified using the Office of Personnel Management classification guidance. (Bain, 1998) As discussed this system has been around for more than 100 years. The current system uses two different mechanisms: one for classifying a job and another for evaluating an employee's

performance. CCAS attempts to combine the two mechanisms into one more efficient mechanism, reducing the duplication of effort. (Bain, 1998)

Some advantages of the use of pay bands include: reduction in the number of classification decisions required during an employee's career, simplification of the classification system decision-making process, support for the delegation of classification authority to line managers, prevents progression of low performers through the pay band by mere longevity, ability to develop separate pay bands for technical and non-technical career ladders, and ability to move people within an organization without the need for reclassification. (Bain, 1998)

Under CCAS, an employee's contribution to organizational goals is evaluated by a supervisor and assigned a numerical score. That score is ranked against the scores of all other employees and everyone is classified as "overcompensated," "undercompensated," or "appropriately compensated." Employees judged overcompensated will have their general pay increase reduced or denied. Those judged as appropriately compensated will receive some or all of their general pay increase and those judged undercompensated will receive more than the general pay increase or possibly a "contribution rating increase" or raise. (Harnage, 1998)

The money to pay for increases comes out of a pot of money known as the "pay pool." The amount of money available within the pay pool is determined by the annual general wage increase, approved by Congress, and the money that would have been available under the GS system for quality step increases, within-grade increases,

performance-based awards, and promotions between grades. (Bain, 1998) In general, money available would amount to approximately ten percent of the total annual payroll for a government organization. The results to date have been encouraging (see Bain 1998, and Hornestay 1998) while some of the newer projects have yet to yield results (see Office of Personnel Management, 1998a and b). Examples of encouraging results include improved performance and teamwork, improved recruitment, decreased turnover, and increased employee satisfaction at some locations. (Hornestay, 1998)

CCAS is a change in the way that employees are compensated and rewarded. Such a change to the system is likely to be met with some resistance. For instance the American Federation of Government Employees is opposed to the CCAS for the following reasons (Harnage, 1998, pg. 14):

1. The project provides no meaningful role for the union and puts far too much discretion over pay in the hands of management.
2. One of the project's goals is to foster and encourage teamwork. Unfortunately, with its overemphasis on the contribution scores of individual employees and a best-to-worst ranking of employee's performance, the project crudely pits one employees' performance against another for a limited share of money.
3. The process for evaluating employee performance and adjusting pay under CCAS is hopelessly complicated.
4. The terms "overcompensated," "appropriately compensated," and "undercompensated" are degrading and send an unmistakable message that employees covered by the project are really in competition with one another and not working for a common goal.

The Contribution-Based Compensation and Appraisal System is an incentive system that is not unique to the federal government. It is, however, applicable to the current General Schedule method of employee classification. It must be approved for

implementation on a case-by-case basis. As discussed above the system provides many benefits over the existing GS system. However, there are concerns about the program such as those of the American Federation of Government Employees.

V. COMPARISON OF INCENTIVE SYSTEMS

A. INTRODUCTION

This chapter compares the three alternative incentive systems within the context of the NAWCAD. The chapter examines the importance of organizational alignment and the goals of employees at the NAWCAD, and discusses criteria to compare the incentive systems and identifies an incentive system for the NAWCAD.

B. COMPARISON OF ALTERNATIVE INCENTIVE SYSTEMS

1. Organizational Alignment

As stated in Chapter I, the organizational goal for the NAWCAD in implementing an alternative incentive plan is to increase productivity. A secondary goal is to accomplish this within the current accounting and resource control systems and identify changes required to those systems.

With the organizational goals in mind we can begin to build a foundation for the incentive system. The incentive system must be framed around a set of core assumptions that emphasize the linkage between people and organizations. (Simons, 1995) People are an organization's ultimate resource. The performance of an organization depends on how it recruits, hires, trains, and retains people and promotes effective performance of its people. (Mica, 1996) Bolman and Deal's (1997, pg. 102-103) core assumptions for focusing on the linkage between people and organizations are:

1. Organizations exist to serve human needs rather than the reverse.
2. People and organizations need each other: organizations need ideas, energy, and talent; people need careers, salary, and opportunities.
3. When the fit between individual and system is poor, one or both suffer: individuals will be exploited or will exploit the organization – or both will become victims.
4. A good fit benefits both: individuals find meaningful and satisfying work, and organizations get the talent and energy they need to succeed.

The values of the organization and the people who make up that organization must be aligned in order to achieve optimum performance. McGregor (1960) argues that "The essential task of management is to arrange organizational conditions so that people can achieve their own goals best by directing their efforts toward organizational rewards" (McGregor, 1960, p.61)

While most organizations are free to adopt any type of organizational structure and incentive system they desire, the government places restraints on the organizational structure and types of incentives allowed under the current system. For example, Congress statutorily limits salaries and defines pay criteria and levels. An incentive system that allowed salaries to increase significantly might be very successful, not to mention popular with employees, however, it would not be permitted under the current system.

The government is starting to recognize the importance of aligning people and organizations. (Sturdivant, 1997) As discussed in Chapter III, today there is greater ability for the system to adopt non-traditional work structures. An incentive system that more closely aligns itself with the current work climate and unique characteristics of the

NAWCAD workforce, as discussed in Chapter II, is more likely to be approved today than it would have been in previous times.

2. Employee Goals

A process for comparison of incentive systems must be developed based on the desired outcomes of the incentive system and alignment of individuals with the NAWCAD's organizational goals. A misdirected reward system is likely to degrade performance in desired areas. (Kerr, 1975 and Gruner, 1997) The task of aligning performance measurement criteria with reward criteria is a challenging one that requires focus and continual measurement. (Stone and Gerard, 1997)

Individual goals must first be determined and prioritized in order to begin to align individual and organizational goals. Using previous theoretical and empirical research Jurkiewicz, Massey and Brown (1998) identified the following fifteen "wants" for both public and private sector employees:

1. A stable and secure future
2. Chance to learn new things
3. Chance to use my special abilities
4. High salary
5. Opportunity for advancement
6. Variety in work assignments
7. Working as part of a team
8. Chance to make a contribution to important decisions
9. Friendly and congenial associates
10. Chance to benefit society
11. Chance to exercise leadership
12. Freedom from Supervision
13. Freedom from pressures to conform both on and off the job
14. Chance to engage in satisfying leisure activities
15. High prestige and social status

A list containing the above 15 "wants" was then given to 296 public employees in a variety of jobs, both supervisory and non-supervisory, to rank. The wants are listed above in order of priority as identified by the 296 employees. Private sector employees given the same list ranked the items in a different order. (Jurkiewicz and Massey, 1996; Ying, 1997; and Jurkiewicz, Massey, and Brown, 1998) For example, the top three private sector employee wants in order were high salary, chance to exercise leadership, and opportunity for advancement. There are no matches among the top three wants in the public and private sectors. This appears to indicate that public sector employees may be motivated differently from private sector employees. If this is the case then the use of incentive systems developed for private sector employees may need to be adjusted for public sector use. It also implies that the use of non-financial incentives may be well suited to public sector employees. These findings are consistent with Roberts' (1990) findings discussed in Chapter II.

By comparing the wants above with the four incentive systems in Chapters III and IV, we can begin to gain an insight into areas that can and cannot be affected by an alternative incentive system. The fifteen wants listed above provide a prioritized listing of goals to achieve with an incentive system. Some of these goals may be affected directly while others can only be affected indirectly. Directly affecting a goal is defined as immediately impacting or achieving that goal. For example, raising all salaries would directly impact goal number four, but it is not likely that an incentive system will directly

create friendly and congenial associates (want number nine) for an employee, the impact of the incentive system is more likely to be indirect through the improvement of the overall atmosphere and working environment.

Indirect goals are important but an incentive system cannot directly affect them, at least in the short run, as greatly as the direct goals. With this distinction in mind we will focus on direct goals as a higher priority than indirect goals. The indirect goals must not and should not be disregarded. The issue is simply a matter of emphasis or focus. Focusing on direct goals and removing the indirect goals allows development of Figure 6. This listing assumes that the removal of a goal from the list does not affect the relative rankings.

1. A stable and secure future
2. Chance to learn new things
3. Chance to use my special abilities
4. High salary
5. Variety in work assignments
6. Working as part of a team
7. Chance to make a contribution to important decisions
8. Chance to exercise leadership
9. Freedom from supervision

Figure 6. Incentive System Direct Goals (in order of priority)

Some of the indirect goals border on direct, for example the installation of a new softball field could be considered as having a direct impact on the goal for a chance to

engage in satisfying leisure activities. Indirect goals or wants are addressed later in the chapter as additional considerations supporting one incentive system over another.

The direct goals above can be used to help compare incentive systems. The most appropriate incentive system may be the one that most closely meets the goals of the organization and the direct goals of the employees. The following section briefly discusses the goals listed in Figure 6 and presents examples of ways to affect each goal.

C. DISCUSSION OF GOALS

The first direct goal is a stable and secure future. Job stability can be affected both externally and internally. A Department of the Navy mandated downsizing of personnel is an example of an external influence. A system that bases employment levels on current workload is an example of an internal influence. This creates a dual element of unstability for the workforce.

Lack of employment stability can undermine the effectiveness of the workforce. This is especially true in the public sector where employees tradeoff salary for job stability. (Mica, 1996) Base closures and contracting with the private sector have decreased the level of job security.

Incentive systems have little effect on external factors that affect stability, however, a system that included performance and seniority in retention decisions, would directly link performance to job security. (Kingsbury, 1995) Current policy is to use only seniority to determine retention in involuntary separations. (Erdreich, 1997) A system that included performance and seniority in retention decisions could help to increase the

stability of workers whose performance meets or exceeds expectations and cushion the external impacts on a workforce.

Basing employment levels on current workload is one method to impact operating results. However, any employment or incentive system that relies upon frequent changes in the number of employees (for example hiring temporary workers during peak workload times) would be very difficult to implement. First, the ability to release civilian employees with little notice is restricted by regulation. Secondly, much of the work performed by the NAWCAD is highly technical and specialized. The ability to locate and hire qualified personnel on short notice would be difficult at best. Additionally, periods of strong economic activity make it doubly difficult to attract and retain highly technical personnel due to the inability of the NAWCAD to offer a competitive salary. (Runion, 1998) Using short-term workload to determine employment levels would adversely impact job stability for at least part of the work force. (Prager and Desai, 1996 and Elam, 1997)

The second goal is a chance to learn new things. In the workplace this goal can be achieved by either on the job or formal training. Formal training allows employees to learn new skills or to remain up-to-date in their skills. As discussed in Chapter II, the ability to learn new things is doubly important to the NAWCAD personnel due to the technical nature of the workforce. The chance to gain new skills can also be used as a reward. For example, those whose performance exceeds a preset level could be allowed to choose a course to attend to achieve a new skill. (Pickett, 1998) It should be noted that

current training guidance requires that the skill is related to the employee's current job or skills that the employee would be expected to use in his or her current job in the near future. (Thorn, 1998)

The third goal is a chance to use special abilities. Meeting this goal requires recognizing the special abilities of each employee and then finding the best match for the employee to the position in the organization that utilizes the abilities. This goal could be best accomplished at the individual employee level. As discussed above, aligning employee and organizational goals facilitates greater productivity.

The fourth goal is high salary. This goal can be structured to be dependent on productivity (through gainsharing or other productivity plans) or independent of productivity. In an organization such as the NAWCAD tying salary to productivity could help to achieve organizational goals because the NAWCAD is a working capital fund activity. Not only is the goal of the NAWCAD to produce a product for its external customers but the revenue generated from production must pay the activity operating costs. The implications of this are discussed in Chapter VI. However, as discussed in Chapters II and III the employees must perceive the connection between productivity and rewards. Also they must feel that they can influence the outcome and retain their salary.

The fifth goal is variety in work assignments. It is possible to link this goal to the second goal, a chance to learn new things. A work system that allows employees to move between jobs or rotate as members of a team could help meet this goal. Also the ability

of the organization to actively seek challenging new work could help stimulate employees.

The sixth goal is working as part of a team. Yeats and Hyten (1998, p. xiii) define a team as "a group of employees who are responsible for managing and performing technical tasks that result in a product or service being delivered to an internal or external customer." Instituting a team based incentive structure may best accomplish this goal. However, it is important to note that working on a team and being rewarded for team accomplishments are not the same thing. Also it is not clear from the Jurkiewicz, Massey, and Brown (1998) survey if employees desire to work with the same team members on a continuous basis or if they desire to rotate between teams.

The seventh goal is the chance to make a contribution to important decisions. Important is not defined in the survey. What is important to one employee may seem trivial to another. Also, an employee's level within the organization is likely to influence what is considered to be an important decision. Possibly more important than the outcome of the actual decision itself is the chance to contribute to the decision. (Ying, 1997) Of more importance to the employees than getting their way is that their views be heard and weighed fairly. This goal is more about giving employees a voice in the decision making process than the actual decision making itself. (Jurkiewicz and Massey, 1996)

The eighth goal is a chance to exercise leadership. Leadership can be in either a supervisory or non-supervisory role. Exercising leadership can be part of the normal

progression of an employee from their introduction into an organization to promotion to higher levels and increasingly difficult work assignments. For example, a new employee may start out working in a lab then later be promoted to lab supervisor and later to the supervisor of multiple labs. At each supervisory level, the employee is likely to have the opportunity to exercise increasing levels of leadership. However, the career progression model affects few employees. Work teams offer an opportunity for more employees to exercise leadership in a non-supervisory role. (Hickman and Creighton-Zollar, 1998)

The ninth goal is freedom from supervision. This goal is the chance to work independently or can be seen as the desire to have the maximum control over tasks. One way to achieve this goal is to allow employees, in small groups, to supervise themselves. This is commonly known as self-directed work groups. Self-directed work groups also free up supervisors or higher level employees to focus on more long-range goals rather than day-to-day supervision. (Fowler, 1995)

D. COMPARISON OF INCENTIVE SYSTEMS

In order to identify an alternative incentive system for the NAWCAD we must determine which incentive system most closely aligns the goals of the organization and the goals of the employees.

1. Individual Incentive Systems

The advantage of an individual incentive system is its ability to be tailored to each individual. This requires effort but when properly implemented results in the closest

alignment of personal and organizational goals. (Guide, 1985) An individual incentive system may have the capability to affect the following direct and indirect goals: stable and secure future, chance to learn new things, chance to use special abilities, salary, variety in work assignments, chance to make a contribution to important decisions, and opportunity for advancement. Some disadvantages of an individual incentive system may be lower quality, higher implementation costs, and potential for an increased accident rate.

As discussed previously, broadbanding's impact is at the individual level. Broadbanding may be capable of meeting all of the direct goals of employees and the indirect goals of advancement and to a certain extent the freedom from pressures to conform. (Pitaski, 1995) Disadvantages include: It would require special legislation. It is not supported by the American Foundation of Government Employees. Broadbanding demonstration projects are not easy to implement.

> This [Broadbanding] Demonstration Project is not the easy way out. If you're an organization and you want to manage people the easy way, don't do the Acquisition Personnel Demonstration. We did not set it up to establish it as the easy way out. Rather we set it up to establish it as the best way we could devise to manage a workforce, be fair and equitable to the employees, and allow them to be rewarded for the contribution they're making as we draw down and expect them to do more. (Bain, 1998, p. 16)

However, broadbanding might be useful as a longer-range approach to the current situation.

2. Group Incentive Systems

In general, a group incentive system provides the same benefits as an individual incentive system without as much implementation effort. In addition, a group incentive system may make it easier to meet the goal of working as a team and exceeds the individual incentive system in providing opportunities to exercise leadership. Multiple teams may provide more opportunities for individuals to exercise team leadership. Additionally, the teams can be used as a mechanism to reduce direct supervision. The drawback is that the plan is not individually tailored and runs the risk of alienating employees who are not in the group. Other disadvantages include maintaining group communication and productivity (if the groups are too large or incorrectly managed), and the lack of information on how group behavioral expectations affect performance. Prior to implementation, the size of the group would need to be defined. This would have to be determined on a case-by-case basis and may be difficult and time consuming.

3. Organizational Incentive Systems

As discussed in Chapter III, organizational incentive systems may require the least amount of effort to implement. An organizational incentive plan may be capable of meeting all of the direct goals for employees and the indirect goal of opportunity for advancement. Organizational plans recognize that the success of the organization is due to the effort of everyone, not just an individual or a group. However, organizational incentive systems suffer from a lack of providing motivation at the individual level and risk alienating high performers. It is difficult to develop a single organizational incentive

plan that affects all employees equally and that they can all understand. The diversity of the work force at the NAWCAD would create additional challenges to an organizational incentive system implementation. For example, not all employees are paid from the same funding accounts. This could create tension between employees if there is the appearance of unequal compensation systems. It may be possible to compensate employees equally from different funds but it may require additional accounting effort.

4. Combining Incentive Systems

Combining the best features of incentive systems may yield the most significant results at the NAWCAD. This is nothing more really than tailoring the incentive system to the organization. (Gotcher, 1997) For example, the ability to implement a group incentive system and yet retain some of the features of an individual system has the potential to do a better job of meeting the goals of the organization and the employees than each system by itself.

Figure 7 below lists the advantages and disadvantages of the incentive systems. Figure 8 below is a comparison of the goals met by the respective incentive systems. The following section explores additional incentives that may increase productivity.

	Advantages	Disadvantages
Individual	• Ability to be tailored on an individual level	• Potential for lower quality • Higher implementation costs • Potential for increased accident rate
Group	• Similar benefits as individual system • Work as a team • More opportunities to exercise leadership	• Risk alienating those outside group • Group size must be determined • Chance of decreased communication and productivity
Organizational	• Easiest to implement • Lower implementation and maintenance costs	• Risk of alienating high performers • Lack of motivation at the individual level • Difficult to implement due to diversity of workforce

Figure 7. Advantages and Disadvantages of Incentive Systems

GOALS	INDIVIDUAL	GROUP	ORGANIZATIONAL
Direct			
A stable and secure future	X	X	X
Chance to learn new things	X	X	X
Chance to use my special abilities	X	X	X
High salary	X	X	X
Variety in work assignments	X	X	X
Working as part of a team		X	X
Contribute to important decisions	X	X	X
Chance to exercise leadership		X	X
Freedom from supervision		X	X
Indirect			
Opportunity for advancement	X	X	X
Friendly and congenial associates			
Chance to benefit society			
Freedom from pressures to conform			
Chance to engage in leisure activities			
High prestige and social status			

Figure 8. Comparison of Goals Met and Incentive Systems

E. OTHER CONSIDERATIONS

There are any number of unique ways to tailor it to the NAWCAD model. As discussed above, money is not one of the top three motivators for the NAWCAD workforce. This allows for the implementation of uncommon solutions to the problems presented by the NAWCAD model.

For example, the NAWCAD could develop a "cafeteria" of incentives for individual employees and for groups. An example of an individual incentive could be approval to attend the training course of your choice, within a very broad job description, upon exceeding a preset goal. The same incentive could be used for a small group. Other examples include:

- The opportunity to lead a group project based on superior results as a team member.
- Rotational assignments of personnel between work areas.
- Development of employee skills databases for matching skills to new projects.
- Recognition of and contribution to top employee's favorite charity.*
- Identification of additional opportunities to engage in recreational activities during working hours.
- Recognition and pay for advanced competencies.
- Rotational assignments to higher levels within the organization.
- Chance for off-site work assignments or traveling assignments.
- A chance to attend a college or university for one semester.
- Chance to attend training at an other than closest location.*
- Chance to conduct training to teach others a unique skill the employee possesses.
- Rotational assignments to private industry.*
- Awards for best customer service (internal and external).
- Group recognition for on-time delivery.
- Hiring and retention bonuses.

Items identified with an asterisk above are not within current policy. Additional approval would be required prior to implementation.

VI. CONCLUDING DISCUSSION AND RECOMMENDATIONS

A. IDENTIFICATION OF AN ALTERNATIVE INCENTIVE SYSTEM

The NAWCAD currently uses incentives such as spot awards, team awards, letters of appreciation, and special recognition letters. One goal of the current incentive program is to move to a more performance based award system that recognizes individuals throughout the year not just at the annual review. It is too soon to determine what impact the changes have made. These changes are consistent with the ideas developed in this thesis.

Chapters III and IV discussed the types of incentive systems currently in use in the public and private sectors. Chapter V examined the wants of a group of public sector employees. Comparing what is available with what is desired can help identify an alternative incentive system. These wants can be viewed as the goals of the incentive system for the individuals affected by the system. Of the alternative systems previously discussed, broadbanding provides the best fit of organizational goals and individual goals, however, the length of time required for development and approval of an experimental incentive system, typically two to five years, rules out its immediate implementation. The use of broadbanding and its capability to most closely align itself to the needs of the organization and the employees warrants further research as a potential long-term solution. Special attention should be given to the examination of other research and

development organizations that have implemented a broadbanding approach. (see Office of Personnel Management, 1998a)

The second choice would be a group incentive system. Group incentives approximate the focus on individual performance found in individual incentive systems. Group incentives require less effort to implement and maintain than individual incentive systems. Group incentives provide more focus on the individual than organizational incentives. Group incentives meet the same individual goals as organizational incentives but there is less risk of alienating top performers. Group incentives allow people to work as members of a team and contribute to the team's performance as well as providing opportunities for leadership. For these reasons, the incentive system recommended for the NAWCAD is a group incentive system.

B. IMPACT ON THE ACCOUNTING PROCESS

The NAWCAD is a Navy Working Capital Fund activity. As such the target is to balance revenues and expenses. Revenues are customer funded. Expenses include the cost of direct labor, other direct costs, production, and general and administrative (G&A) costs. The funds are received from customers based on a specified work rate (expressed in dollars per hour). The work rate is determined by taking the sum of the cost of labor and overhead, and subtracting any institutional funding then dividing this number by the burdened direct work-years. The accounting system currently in place tracks all of the above information and is used to set the burdened rates. The accounting system at the NAWCAD also tracks the expenditure of labor against the cost codes for each project.

As such, the accounting system currently in place may be able to directly support the implementation of a group incentive system with little modification. This is an additional advantage to selecting the group incentive system. Specific accounting process requirements could only be determined once the incentive system is developed and the size and composition of the groups determined. However, the changes to the current accounting processes are likely to be minimal. There will likely be the requirement to generate additional reports to support a group incentive system. The accounting and resource control processes in place at the NAWCAD capture data of sufficient detail that it is unlikely that additional data will need to be gathered to generate new reports.

C. INCENTIVE SYSTEM IMPLEMENTATION RECOMMENDATIONS

Prior to implementing a group incentive system a survey needs to be conducted of the NAWCAD employees to determine if their wants are the same as the wants identified in Jurkiewicz, Massey and Brown's (1998) study. Once the wants of the NAWCAD employees are determined, the system can be designed to closely align the individual and organizational goals.

Prior to implementation, the size of the work groups should be determined. Group size should be determined on a case-by-case basis with maximum input by all affected personnel. In some labs it will be feasible to include all personnel in one group. In other labs it will be necessary to form several groups. Group sizes should be small enough to allow for adequate communication within the group. Specifying groups that are too large will decrease productivity.

One potential problem in implementation is overlapping or indirect personnel. It may not be obvious in which group these personnel belong. Again, they should be assigned on a case-by-case basis. Although it is possible to assign a person to more than one group, putting a person in more than one group increases the amount of effort required to monitor the incentive system.

An added advantage of a group incentive system is that the system can be tested on individual work centers to determine how effective it is prior to organization wide implementation. It is recommended that several test groups be implemented prior to organization wide implementation.

There are other potential limitations to implementation of a group incentive plan. First, the limitations of the current federal employment system must be observed to avoid violating any civilian personnel regulations. Secondly, a group incentive system may raise concerns of employees who are represented by a union. These concerns should be addressed and resolved prior to implementing an incentive system.

The incentives must be determined prior to implementation. Each employee should clearly understand the relationship between performance and incentive. Additionally, the incentives must reward the desired group behavior.

D. LIMITATIONS

There are limitations to the findings of this thesis. This thesis has given an overview of the three main incentive plans currently in use today. The volume of research conducted in the field of employee incentives precluded an exhaustive

examination. Other incentive systems may be in use that could be applied at the NAWCAD.

The employee wants discussed in this thesis may not be the same as the wants of employees at the NAWCAD. Implementing an incentive plan that is not aligned with the employee wants is not likely to increase productivity and may decrease it.

E. RECOMMENDATION FOR FURTHER RESEARCH

There are several other areas that can be explored at the NAWCAD as an extension to this thesis. They include:

- Conduct a survey of the NAWCAD personnel to see what their organizational wants are. This survey would determine if the wants of the NAWCAD personnel are similar to the wants identified in the surveys presented in Chapter V. NAWCAD personnel were not included in studies cited. It is important to determine the wants of the NAWCAD personnel to correctly align the incentive system with organizational goals.
- Defining the size of individual work groups on a work center by work center basis. As discussed above the size of the work group partially determines the effectiveness of the incentive system.
- Explore broadbanding. Broadbanding may be a long-term solution however the cost/benefits of implementation, as well as the concerns of the American Federation of Government Employees, must be explored.
- Additional exploration of types of incentives private sector research and development organizations are using.
- Develop an annual recruiting quota of technical personnel based on a forecasting model. The ability to hire qualified technical personnel to replace projected losses during the year decreases incidences of gaps or personnel shortages. This can help to stabilize the workforce.

F. CONCLUDING COMMENTS

An alternative incentive system, when properly implemented and maintained possesses the ability to improve quality and productivity at the NAWCAD. There are

barriers in the federal employment system to incentive plan implementation however the system is changing and embracing new methods.

This thesis recommends that a group incentive plan, with the group size to be determined on a case-by-case basis, be implemented at the NAWCAD to improve productivity. The NAWCAD appears to possess the necessary accounting and other information to implement a group employee incentive plan.

LIST OF REFERENCES

Agor, Weston H., "The Measurement, Use, and Development of Intellectual Capital to Increase Public Sector Productivity," *Public Personnel Management*, vol. 26, no. 2, Summer 1997.

Bain, Terry, Caruth, Greg, and Johnson, Collie, "Civilian Acquisition Workforce – Listen Up!" *Project Management*, July-August 1998.

Barnes, R., "*Motion and Time Study,*" John Wiley & Sons, 1980.

"Benefits: Make the Incentive Fit The Plan," Author Anonymous, *Personnel Journal*, January 1995.

Bergstrom, Robin Yale, "How Big Is Your Team?" *Production*, March 1994.

Bolman, Lee G. and Deal, Terrence E., *Reframing Organizations*, Jossey-Bass, 1997.

Cammann, Cortland T. and Lawler, Edward E., "Employee Reactions To A Pay Incentive Plan," *Journal of Applied Psychology*, October 1973.

Chingos, Peter T., *An Overview of Variable Compensation*, The Conference Board, 1995.

Crawford, John W. and Krahn, Steven L., "The Demanding Customer and the Hollow Organization," *Public Productivity and Management Review*, vol. 22, no. 1, September 1998.

Corporate Overview, Naval Air Warfare Center, Aircraft Division, URL: http://www.nawcad.navy.mil/nawcad/information/home/ad_corp_ov.html

"*Guide for the Design and implementation of Productivity Gain Sharing Programs,*" Department of Defense Instruction 5010.31-G, March 1985.

Deputy Assistant Secretary of the Navy (CP/EEO), "*Department of the Navy Human Resources Implementation Guidance,*" Guide Number 430-01, October 1997.

Deputy Assistant Secretary of the Navy (CP/EEO), "Department of the Navy Human Resources Implementation Guidance," Guide Number 451-01, draft copy.

Dougherty, David, "Tying Pay to Performance," *Public Productivity Review*, March 1984.

Erdreich, Ben L., "The Future of Merit in the Personnel System," *The Public Manager*, Summer 1997.

Elam, L. B., "Reinventing Government Privatization-Style – Avoiding the Legal Pitfalls of Replacing Civil Servants with Contract Providers," *Public Personnel Management*, vol. 26, no. 1, Spring 1997.

Ezzamel, Mahmoud and Willmott, Hugh, "Accounting for Teamwork: A Critical Study of Group-based Systems of Organizational Control," *Administrative Science Quarterly*, vol. 43, 1998.

FitzRoy, Felix R., *Comment on Martin L. Weitzman, "Incentive Effects on Profit Sharing,"* Trends in Business Organization: Do Participation and Cooperation Increase Competitiveness? International Workshop, 1995.

Florkowski, Gary W. and Lifton, Donald E., "Assessing Public-Sector Productivity Incentives: A Review," *Public Productivity & Management Review*, vol. 43, Fall 1987.

Fowler, Alan, "How To Build Effective Teams," *People Management*, February 23, 1995.

Fried, Louis, "Team Size and Productivity in Systems Development: Bigger Does Not Always Mean Better," *Information Systems Management*, Summer 1991.

Gabris, Gerald T. and Mitchell, Kenneth, "Merit Based Performance Appraisal and Productivity: Do Employees Perceive the Connection?," *Public Productivity Review*, Winter 1985.

"*Ways To Improve Federal Management and Use of Productivity Based Reward Systems,*" General Accounting Office, December 31, 1980.

Globerson, S. and Parsons, R., "Multi-factor Incentive Systems: Current Practices," *National Institute for Decision Science Proceedings*, November 1994.

Gotcher, Renee, "Combine Bonuses With Rewards To Keep Employees On Board," *Enterprise Careers*, October 10, 1997.

Gruner, Stephanie, "How Can We Improve Our Bonus System?" *Inc.*, vol. 19, no. 3, March 1997.

Hedley, Timothy P., "Measuring Public Sector Effectiveness Using Private Sector Methods," *Public Productivity and Management Review*, vol. 23, no. 3, March 1998.

Hesse, L. A., "Wage Incentives Eliminate Zamble Time," *Industrial Engineering*, July 1997.

Hickman, Gill Robinson and Creighton-Zollar, Ann, "Diverse Self-Directed Work Teams: Developing Strategic Initiatives for 21st Century Organizations," *Public Personnel Management*, vol. 27, no. 2, Summer 1998.

Hornestay, David, "Noble Experiments," *Personnel Management*, October 1996.

Hornestay, David, "The Demonstration Projects," *Personnel Management*, October 1996.

Howard, Jerry, "The Q Factor," *Sanitation Supervisor*, June/July, 1997.

"Introduction to Navy Working Capital Fund NAWC Business Units," brief presented by Mr. Ron Runion, Comptroller, NAWCAD, June 1998.

Jain, R. K. and Triandis, H. C., *Management of Research and Development Organizations*, Wiley and Sons, 1990.

Johnson, Sam T., "High Performance Work Teams: One Firm's Approach to Team Incentive Pay," *Compensation and Benefits Review*, September/October 1996.

Jurkiewicz, Carole L. and Massey, Tom K., "What Municipal Employees Want From Their Jobs Versus What They Are Getting, A Longitudinal Comparison," *Public Productivity and Management Review*, vol. 20, no. 2, December 1996.

Jurkiewicz, Carole L., Massey, Tom K., and Brown, Roger G., "Motivation in Public and Private Organizations," *Public Productivity & Management Review*, v. 21, n. 3, March 1998.

Kameda, Tatsuya and Stasson, Mark F., "Social Dilemmas, Subgroups, and Motivation Loss in Task-Oriented Groups: In Search of an 'Optimal' Team Size in Division of Work," *Social Psychology Quarterly*, March 1992.

Kerr, S., "On the Folly of Rewarding A, While Hoping for B," *Academy of Management Journal*, v. 18, 1975.

Keefe, Thomas J., French, George R., and Altmann, James L., "Incentive Plans Can Link Employee and Company Goals," *Journal of Compensation and Benefits*, January/February 1994.

King, James B., "The Government of the Future: A Personnel Perspective," *The Public Manager*, Summer 1997.

Kingsbury, Nancy, "Smaller Government: New Paradigms for Reductions-in-Force," *The Public Manager*, Summer 1995.

Lawler, Edward E. III, *Pay and Organizational Effectiveness: A Psychological View*, McGraw-Hill, 1971.

Lawler, Edward E. III, *Strategic Pay: Aligning Organizational Strategies and Pay Systems*, Jossey-Bass, 1990.

Leptien, Christopher, "Incentives for Employed Inventors: An Empirical Analysis Wit," *R&D Management*, vol. 25, no. 2, April 1995.

Levine, Gene, "Incentive Systems: Individual vs. Group," *Bobbin*, vol. 36, no. 41, December 1994.

Marchetti, Michele, "People Soft," *Incentive*, May 1997.

Marshall, Neil, "Pay-For-Performance Systems, Experiences in Australia," *Public Productivity & Management Review*, vol. 21, no. 4, June 1998.

McCue, Clifford P. and Giankas, Gerasimos A., "The Relationship Between Job Satisfaction and Performance, The Case of Local Government Finance Officers in Ohio," *Public Productivity and Management Review*, vol. 21, no. 2, December 1997.

McGregor, D., *The Human Side of Enterprise*, McGraw Hill, 1960.

Mica, John L., "Reforming the Civil Service for the Twenty-First Century," *The Public Manager*, Summer 1996.

Milakovich, Michael E., "Improving Customer Service in Government," *The Public Manager*, Fall 1995.

Muhlemeyer, Peter, "R&D – Personnel Management by Incentive Management: Results," *Personnel Review*, vol. 41, no. 4, 1992.

Naval Air Warfare Center Aircraft Division Instruction 12451.2, Awards Instruction, July 1996.

Office of Personnel Management, Federal Register, v. 63, n. 56, URL: http://www.opm.gov/ fedrigis/1998a/63r14253.txt.

Office of Personnel Management, Federal Register, v. 63, n. 57, URL: http://www.opm.gov/fedrigis/1998b/63r14579.txt.

Office of Personnel Management, *"Pay Structure of the Federal Civil Service,"* March 31, 1980a.

Office of Personnel Management, *"Incentive Awards – Federal Personnel Manual Supplement,"* September 1980b.

Orvis, Bruce R., Hosek, James R., and Mattock, Michael G., *"Pacer Share – Productivity and Personnel Management Demonstration,"* National Defense Research Institute, 1993.

Patton, Kevin R. and Daley, Dennis M., "Gainsharing In Zebulon: What Do Workers Want?" *Public Personnel Management*, vol. 27, no. 1, Spring 1998.

Peck, Charles A., "Individual Incentive Programs A Research Report," *The Conference Board*, Report Number 1127-95-RR, 1995.

Pelletier, B. P. and Rahim, M.A., "Total Quality Management and Drawbacks of Incentive Systems," *Industrial Management*, Jan/Feb 1993.

Pickett, Les, "Competencies and Managerial Effectiveness: Putting Competencies to Work," *Public Personnel Management*, vol. 27, no. 1, Spring 1998.

Pitaski, Scott L., "Opening Doors With Broadbanding," *The Conference Board*, 1995.

Prager, Jonas, and Desai, Swati, "Privatizing Local Government Operations, Lessons From Contracting Out Methodology," *Public Productivity and Management Review*, vol. 20, no. 2, December 1996.

Pruter, Robert, "Employee Incentives Can Reap Dividends That Far Exceed Their Cost or Complexity," *Employee Benefit Plan Review*, October 1998.

Ralston, Roy W. and Waters, Rollie O., "The Impacts of Behavioral Traits on Performance Appraisal," *Public Personnel Management*, vol. 25, no. 4, Winter 1996.

Ridgeway, V. F. "Dysfunctional Consequences of Performance Measurement," *Administrative Science Quarterly*, 1956.

Rickert, Donna, Duncan, W. Jack, and Ginter, Peter M., "An Analysis of An Incentive Sick Leave Policy in a Public Sector Organization," *Public Productivity and Management Review*, vol. 19, no. 1, September 1995.

Riggs, Lynn M., "Pay for Performance," *Credit Union Management*, August 1995.

Risher, Howard, "The Search for a New Model for Salary Management: Is There Support for Private Sector Practices?" *Public Personnel Management*, vol. 26, no. 4, Winter 1997.

Robinson, Macon R., *Marine Leadership of Civilian Personnel: An Analysis of Marine Contracting Officers' Management of Civilian P&C Personnel*, Master's Thesis, Naval Postgraduate School, December 1997.

Roberts, Benjamin J. et al., *An Analysis of the Factors Affecting the Career Orientation of Federal Civilian Engineers*, Naval Postgraduate School, July 1990.

Rubino, John A. "A Guide to Successfully Managing Employee Performance: Linking Performance Management, Reward Systems, and Management Training," *Employment Relations Today*, Summer 1997.

Runion, Ronald L., Comptroller, Naval Air Warfare Center, Aircraft Division, Patuxent River Maryland, correspondence of 08 December 1998.

Sharma, Arun and Sarel, Dan, "The Impact of Customer Satisfaction Based Incentive Systems on Salespeople's Customer Service Response: An Empirical Study," *The Journal of Personal Selling & Sales Management*, Summer 1995.

Simons, Robert, *Levers of Control*, Harvard Business School Press, 1995.

Stone, Warren S. and Gerard George, "On the Folly of Rewarding A, While Hoping for B, Measuring and Rewarding Agency Performance in Public-Sector Strategy," *Public Productivity & Management Review*, March 1997.

Sturdivant, John, "The Future of Federal Labor-Management Relations and Partnership," *The Public Manager*, Summer 1997.

The Graduate School of Business Stanford University, "*Motivation of Scientists and Engineers,*" April 1959.

The Network Discusses: Team Size, Pay, Performánce, and Awards, Author Anonymous, *Compensation and Benefits Review*, March/April 1996.

Thorn, Louis, Training Department, Naval Air Warfare Center, Aircraft Division, Patuxtent River Maryland, telephone conversation of 18 December 1998.

U.S. Congress, Hearing before the House of the Committee on Government Reform and Oversight, House of Representatives, October 31, 1995.

Wakefield, Ann, "Employee Incentives," *Bank Marketing*, January 1996.

Webb, Harold, "Productivity Efforts in Personnel Management," *Public Productivity Review*, March 1984.

Welbourne, Theresa M. and Cable, Daniel M., "Group Incentives and Pay Satisfaction: Understanding the Relationship Through an Identity Theory Perspective," *Human Relations*, June 1995.

Welbourne, Theresa M. and Gomez-Mejia, L. R., "On the Relationship Between Objective Increases in Pay and Employee's Subjective Reactions," *Journal of Organizational Behavior*, vol. 13, 1992.

Yeatts, Dale E. and Hyten, Cloyd, *High-Performing Self-Managed Work Teams: A Comparison of Theory and Practice*, Sage, 1998.

Ying, Yuan, "Determinants of Job Satisfaction of Federal Government Employees," *Public Personnel Management*, vol. 26, no. 3, Fall 1997.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center.....2
   8725 John J. Kingman Road, St 0944
   Fort Belvoir, VA 22060-6218

2. Dudley Knox Library.....2
   Naval Postgraduate School
   411 Dyer Road
   Monterey, California 93943-5101

3. Naval School, Civil Engineer Corps Officers.....2
   Moreell Library
   3502 Goodspeed St., STE 1
   Port Hueneme, CA 93043-4336

4. Professor Kenneth J. Euske, CodeSM/KU.....1
   Naval Postgraduate School
   Monterey, CA 93943

5. CDR Theodore A. Hleba, Code SM/HB.....1
   Naval Postgraduate School
   Monterey, CA 93943

6. Mr. Ronald R. Runion.....1
   Naval Air Warfare Center, Aircraft Division
   Code 7.6, Comptroller Dept.
   Patuxent River, MD 20670-5304

7. LT Clifton G. Ross.....1
   RR 1 Box 22
   Almena, KS 67622